



PERFORMANCE ON THE STUMP

RESULTS FROM THE COMPREHENSIVE PROFESSIONAL STUMP GRINDER TEST CONDUCTED BY FORST & TECHNIK

Stump grinders are indispensable helpers in landscaping and tree care when trees are not only felled but also their stumps need to be removed. Among the many available solutions, we took a closer look at four self-propelled stump grinders in the 55-kW class, together with arborist Carsten Lemke.

The variety of stump grinders is impressive. There are PTO-driven versions for tractors and hydraulically driven models for excavators. The latter show their advantage when removing stumps along roads, as the excavator can quickly move from one location to the next. They also prove their worth when clearing construction sites or working on slopes.

Even though excavator attachments are common in practice, most readers probably have a different image in mind when they hear the term "stump grinder". For example, the many smaller machines with wheel drive that are guided and operated by hand. These compact and

cost-effective machines are the best-selling category of stump grinders. They are typical entry-level models, but experienced arborists, as well as landscaping and gardening professionals, also own them, after all, every stump size requires the right machine.

For professionals, however, a much bigger role is played by self-propelled, hydraulically powered machines on tracks or wheels. These are powerful specialist machines, designed in every respect for their task and versatile in use. That starts with the engine and drive system for the cutter wheel and extends to an all-terrain undercarriage and a compact, narrow design that allows them to work even in

confined spaces, such as small gardens or narrow access points.

Across the EU, the market offers models with diesel and petrol engines ranging from 19 to over 80 kW. At present, however, demand drops significantly as engine power increases. A few years ago, things looked different, manufacturers told us. But rising prices (around €90,000 for our test machines), the uncertain economic outlook, and service prices that have remained unchanged for years have led to professional companies often settling for smaller models or relying on their existing larger machines.

At this point, we should also mention the

mounted stump grinders for tracked tool carriers. They attract interest particularly when stumps only need to be ground occasionally, or when contractors want to make better use of an existing tool carrier.

However, buyers should pay close attention to the swing range of the cutting arm, the possible grinding depth below ground, and the maximum cutting height. Many of these units are also wider than the roughly 90 cm typical of the machines in our test. What's more, they are usually only available with a tracked undercarriage — not always the best choice in private gardens, where turning manoeuvres can easily damage lawns.

THE TEST MODELS

For this reason, our test focused on the professional class of stump grinders. We tested the self-propelled models FSI D74, Herder-Fermex SCT-550H, Rayco RG80-R, and Vermeer SC70TX.

The brands Hagedorn, Carlton, and Bandit are not represented because the manufacturers or dealers did not want to participate in the test. Other brands are missing because they are not represented in the 55-kW class.

Nevertheless, our selection has a lot to offer. It includes two stump grinders with a tracked chassis (Herder-Fermex, Vermeer) and two machines with a four-wheel-drive chassis (FSI, Rayco). All models are operated with a radio remote control. The Vermeer SC70TX also features an additional control stand with lever controls. We were able to compare three mechanical drives for the cutting wheel with one purely hydraulic drive (Herder-Fermex). The selection also includes three machines with a diesel engine and one with a petrol engine (Rayco), with the diesel engines having an output of 50 or 55 kW and Rayco's petrol engine delivering 63 kW.

The models were tested for a week by arborists Carsten and Thorben Lemke from Lauenbrück, and Mario Graßmann, who specialises in removing stumps, also participated on the first day. They removed large ash and beech stumps,

as well as various medium-sized hardwood stumps on commercial property and in gardens, and spruce stumps in the forest.

STUMP GRINDERS IN GENERAL

Before we go into the individual models, some general information about the selected stump grinders is appropriate. Engine power and high torque in the largest possible speed range are essential factors for the use of stump grinders. After all, users want to grind away as much wood as possible in a short time. "The performance on the stump has to be right," our testers say in unison. For them, it is a priority, along with service, low fuel consumption, and high manoeuvrability. Although there are more powerful stump grinders than our test machines, the European emissions standard has ensured that diesel engines in this country usually stop at 55 kW. For more powerful engines, manufacturers would have to install an AdBlue system in addition to the diesel particulate filter. Or they can opt for a petrol engine, like Rayco did with its RG80-R.

The design of the drive train is also cru-

cial for performance, with a sufficiently dimensioned crankshaft, powerful V-belts, and a robust grinding wheel shaft. They must be able to cope with sudden resistance and withstand enormous vertical and horizontal forces. A heavy grinding wheel with optimally arranged tools also plays a role in rapid work progress. In our test models, it is either driven by a cardan shaft (Vermeer), by single- or double-sided V-belts and toothed belts (Rayco, FSI), or purely hydraulically (Herder). The V-belt drive is simple and effective because it also provides overload protection. Nevertheless, the slip should be as low as possible. Our testers currently consider triple V-belts to be the best solution.

"Stump grinding is a seasonal business from autumn to spring. But there are specialists who grind all year round"

Because the cutter wheel and its teeth are constantly in contact with the ground, stones, and other foreign objects, it must be particularly resistant. The teeth still wear out quite quickly. However, what the best solution looks like is somewhat a result of the working method and personal preferences. The cutter wheels



of our test grinders were equipped with 24 to 32 grinding teeth, which were arranged alternately or opposite one another around the outer edge of the cutter wheel and ran spirally on both sides of the cutter wheels. By staggering the grinding teeth, each tooth makes a separate path, which achieves higher grinding performance. Their carbide tips consist of the extremely wear-resistant tungsten carbide. With FSI, Herder, and Vermeer, the teeth are form-fitting on torsion-resistant tooth bodies that are attached to the cutter wheel with two to three screws. The tooth tips can be turned one or three times before they are replaced individually without the tooth body. Rayco's teeth, on the other hand, are made of a single cast; if the carbide tips are worn out, the entire tooth body is replaced.'

For self-propelled stump grinders, compact dimensions and a weight that allows transport with a car or pickup trailer are important. This is the case with our test machines, which weigh between 1,500 and 2,000 kg. In terms of width, 89 cm has become the narrowest dimension. This is necessary so that the machine can get to the job site through narrow gates. To achieve this, the outer twin wheels must be removed from the wheeled machines. The chassis of the tracked machines, on the other hand, can be easily adjusted using the radio remote control. During grinding, the widest possible footprint is, of course, important so that the machine is stable. Tracked machines are very manoeuvrable, have good climbing ability, and are all-terrain, but they cause shearing damage to the ground during turning manoeuvres. Preference for wheeled or tracked undercarriage vary from country to country. In Great Britain or Belgium, customers mainly buy tracked chassis, while in Germany, all-wheel-drive chassis are more popular.

Today, stump grinders are consistently operated with a radio remote control. It has the advantage that you can always position yourself optimally. However, some models are still available with a wired control (Herder) or with a control stand. Both are useful if the radio con-

nection is disrupted or the remote control's battery fails. The Vermeer SC70TX has a control stand among our test machines. For transport, it is stowed at the rear of the machine, and for grinding, it is folded out to the front. There, the operator also has a good view, but unlike with the radio remote control, they are protected from flying chips by a pane of armoured glass.



FSI D74

The Danish manufacturer FSI Stump Cutters has been building all types of stump grinders for 23 years: 9 hydraulically driven ones for mounting on excavator arms, three PTO-driven ones for tractors, and 17 self-propelled stump grinders, which are available with either wheeled or tracked chassis.

Our test machine, the FSI D74, has an all-wheel-drive chassis with twin wheels on the front axle as standard. To achieve a passage width of 89 cm, they must be removed, but the effort is minimal. If you don't like that, you can also get the machine with on tracks. With a length of

3.27 m, the machine also remains manoeuvrable.

The four-cylinder diesel from Kohler reaches a torque of 330 Nm at 1,500 rpm with 55 kW, the highest of the four test grinders. The two-stage travel drive offers twice as much traction in the slow stage as in the fast one, with which the machine travels 4 to 5 km/h. In fast gear, only the oil motors of the front wheels

are active, while in the slow travel stage, the oil motors of all wheels are active. At 2,300 mm, the FSI D74 has the largest sweep range in the test field. This is possible because the superstructure with the engine and grinding arm sits on a slewing ring and swings back and forth over the chassis.

Critics complain that the long arm transfers high forces to the slewing ring during work. However, the Power Sweep autopilot counteracts this to some extent. If the grinding resistance decreases in rotten wood, the swivel speed increases. If the resistance increases in hard wood, on the other hand, the swivel speed de-

creases. In the opinion of our testers, this helps them enormously, because without this function, the machine operator must constantly concentrate on regulating the sweep speed.

The cutter wheel is supplied with power on both sides via triple V-belts. It takes a while to retighten them every 50 to 100 hours, but they hold very well and are almost maintenance-free.

Our testers liked the closed bearing housing of the cutter wheel and the long grinding arm because it can penetrate deep into the ground. The dozer blade also contributes to this, as it can be used to lift the rear. However, its main purpose is to distribute the ground material after work. During grinding, the new Chip Baffle plate, positioned behind the cutter wheel, helps by pushing accumulated chips to the side as it swings. Normally, a second person handles this task, and while this new feature doesn't make them redundant, it does lighten their workload.

The grinding wheel has 2 x 14 teeth with tungsten carbide tips that can be rotated three times. A special feature is that the cutter wheel on the FSI is not round. At 740 mm, it also has the largest diameter in the comparison. The FSI D74 is operated with a Scanreco radio remote control. Under the hood, there is also a control block for emergencies, with which it can still be manoeuvred if the radio control fails. The battery of the remote control is designed to last a full day of work. In Carsten Lemke's opinion, FSI could have made this a bit more generous. However, the same applies to the other models. With his old Carlton stump grinder, he never had to worry about this issue.

Another point of criticism is the chip-throwing behaviour of the FSI D74. Compared to the other test machines, it throws a noticeable amount of chips and dust around. In his opinion, this is a disadvantage in private gardens, even if you set up a debris guard.

Overall, the FSI D74 is a well-thought-out stump grinder that achieves high per-

formance even on large and rock-hard stumps. It has the largest sweep range, the greatest grinding height, and the largest cutter wheel.



Herder-Fermex SCW/T-550H

Founded in the Netherlands in 1947, Herder has long specialised in developing machines and equipment for vegetation maintenance along ditches and roads. In 2011, it acquired the Dutch company Fermex (originally Vermeer Netherlands) and has since also offered stump grinders. These include hydraulic attachments for excavators (six models) and tractors (four models), as well as six self-propelled stump grinders available on wheels or tracks.

We took a closer look at the Herder-Fermex SCW/T-550H, the second-largest model in the range. Its four-cylinder Perkins diesel engine, delivering 55 kW, supplies power to the cutter wheel entirely via hydraulics on one side. The benefit of this system is that no drive shafts or belts are subject to wear, while the drawback is a slightly higher power loss compared to mechanical drive systems.

The SCW/T-550H is available either

with wheels or tracks. For our test, we used the tracked version, which offered a respectable travel speed of 4 km/h — impressive for a tracked machine —

and appreciated by our testers. They also valued the quick-adjust track width, which can be changed from 123 cm to 85 cm while driving. This makes it the narrowest of the four stump grinders tested.

The grinding arm moves from side-to-side at the stump with the help of two cylinders, and the arm kinematics enable an impressive grinding height of 630 mm. The cutter wheel carries 24 round chisel teeth with tungsten carbide tips, each rotatable three times to extend service life. Two types of tooth holders are fitted: angled teeth that handle the actual grinding, and straight-aligned teeth that clear the debris from the cut. A rubber-cloth guard on the grinding wheel helps minimise debris scatter, while a rear dozer blade distributes the ground material after work. A noteworthy optional feature — which we did not test — is an additional front-mounted dozer offered by Herder.

Our testers praised the Autec radio remote control. For Carsten Lemke, it took some getting used to, as the cutter wheel

is operated solely with the right joystick. However, he noted that the machine could be manoeuvred with excellent sensitivity. One function he missed was automatic sweep-speed control. The radio remote allows two speed settings, but fine adjustments must be made manually via a potentiometer. In the event of radio interference, the machine also includes a wired control backup.

Carsten Lemke did raise one point of criticism. While the grinding wheel is protected by a cover plate to prevent accidental contact, it tends to catch on the stump when attempting to grind below ground level. This makes the work more difficult, and in the testers' opinion, the cover should be designed to lift automatically — as seen on the Rayco and Vermeer models — when grinding deeper. Overall, the Herder-Fermex SCW/T-550H is a very capable stump grinder. When it comes to very large stumps, however, it's not the first choice, as it requires a more careful approach. If too much material is removed in a single sweep, the cutting wheel tends to lose speed.

That said, our tester admits he was probably still a bit spoiled by the FSI's performance in direct comparison.

Rayco RG80-R

The US manufacturer Rayco is part of the Alamo Group, along with other well-known brands such as Morbark, Timberwolf and McConnel — the Herder company is also part of this group. The general representation for Germany is held by Ufkes Greentec, which also produces its own PTO-driven attachments for tractors (Greentec Piranha) and hydraulic grinders for excavators (Greentec Shark).

Rayco offers two walk-behind stump grinders and six self-propelled models powered by petrol engines — four wheeled versions, two of which are also available with tracks. We tested the most powerful model available in Europe, the RG80-R.

Introduced in 2019, it was the first stump grinder with a petrol engine. The power unit comes from Ford and delivers 63 kW, driving the chassis hydraulically with two speed stages and supplying the cutter wheel with power via a toothed belt and hydrostatic drive. Power is transmitted by a hydraulic motor on the grinding arm. With its petrol engine, Rayco not only meets European emissions standards but also achieves a lighter build and comparatively quiet operation. Although

we didn't test fuel consumption, some expect petrol engines to use more fuel than diesel — yet this may be offset by the fact that many municipalities now prefer petrol machines due to particulate regulations.

The machine's low height and deeply mounted engine contribute to excellent stability, as does the four-wheel chassis with twin wheels. Under dry conditions, it performs well off-road, though tracked chassis still have advantages on steep embankments. To pass through narrow gates, the operator must remove the four outer wheels, which is made easy by the quick-release fasteners. At 91 cm, it is slightly wider than the other machines in their narrow design.

During the test, Carsten Lemke was impressed by the Rayco's performance, admitting he hadn't expected such strength given the petrol engine's lower torque. He also praised the chip-throwing behaviour, noting that the heavy grinding wheel's slower rotation meant the RG80-R threw out very few chips or debris — making it ideal for use in gardens.

Its long design means only minor compromises in manoeuvrability, while the sweep range, grinding depth and height were all rated positively. The small, low resistance cutting tips were another plus. However, Lemke was not entirely satisfied with the grinding wheel itself, as the grinding teeth do not cover the full disc. This means it cannot grind directly downwards — the blunt disc simply rests on the stump, cutting only when the grinding arm is swung.

After the test, Ufkes Greentec explained that this design ensures even load distribution on the grinding shaft and reduces wear. On request, two top-cutting teeth can be added as an option. The rear dozer blade also received positive feedback, as it can be adjusted both in height and sideways.

Vermeer SC70TX

Like Rayco, Vermeer also hails from the USA. The company produces stump grinders, trenchers, horizontal grinders,





compact loaders and wood chippers. Its stump grinder range includes seven models with engine outputs between 19 and 50 kW, available on wheels or tracks. Our test model, the SC70TX, is the most powerful from this manufacturer, equipped with a 50 kW Caterpillar diesel engine.

We were unlucky that the electrical clutch for the grinding wheel stopped working on the second day of testing, though this turned out to be fortunate, as it allowed us to experience Vermeer Germany's excellent service. The headquarters in Schweig responded promptly, sending a service technician the next day.

Conclusion

Thanks to its high performance, the FSI D74 stump grinder received the highest rating from our testers, despite one minor weakness. However, all the other models are also recommended without reservation for professional use. In particular, the Rayco RG80-R delivered some positive surprises for Carsten Lemke.

et tools, arranged in pairs to the left and right and in spirals on the sides. The tungsten carbide tips can be rotated 180°, with a top cutter always followed by a bottom cutter. To prevent operators from reaching into the wheel, it has a large protective hood that pushes up on the stump when grinding into the ground.

The SC70TX also features a large rubber chip guard to contain debris and chips. To navigate narrow garden gates, the chassis can be narrowed to 89 cm via the remote control, though the side rubber aprons must be removed somewhat awkwardly. Two cylinders manage lateral sweep movements, controlling both the grinding arm and the superstructure with the engine and chip bunker. The Smart-Sweep control automatically regulates sweep speed. Although the model still has a control stand, 90% of machines are now delivered with radio remote control, and the push buttons are dust-protected. A spare battery with charger is stored conveniently.

Although the basic design of the Vermeer is over 20 years old, the SC70TX still performs impressively in Carsten Lemke's opinion. It is powerful and capable of tackling steep embankments, particularly with its tracked chassis.

The SC70TX is powered by a 50 kW diesel engine with 260 Nm of torque. The grinding wheel is activated via an electric clutch, with power transmitted mechanically through a cardan shaft featuring integrated impact damping and a helical gear in an oil bath on the wheel. This delivers solid stump performance, though in Carsten Lemke's opinion, it does not match the FSI D74. Remarkably, the manufacturer states that the cardan shaft is maintenance-free apart from regular lubrication, and Vermeer even provides a 3,000-hour warranty.

The grinding wheel uses 30 Yellow Jack-

[Oliver Gabriel]

The FSI D74 for the test was provided by FSI Partner VOGT dealer and importer for the German and Austrian market.



W: [HTTPS://WWW.VOGTGBH.COM/](https://www.vogtgbh.com/)

TECHINICAL DATA FOR THE STUMP GRINDERS

FSI D74, RAYCO RG80, VERMEER SC 70 TX AND HERDER-FERMEX SCT-550H

MODEL	FSI D74	Herder-Fermex SCW/T-550H	Rayco RG80-R	Vermeer SC 70 TX
MANUFACTURER	FSI	Herder	Rayco	Vermeer
DEALER/ IMPORTER	Vogt	Wilmers Kommunal	Ufkes Greentec	Vermeer Deutschland
Dimensions L/W/H	3270 - 890 - 1520 mm	3720 / 850 - 1230 / 1560 mm	3610 - 910 - 1600 mm	3597 / 890 - 1300 1830 mm
Weight	1725 kg	2000 kg	1465 kg	1770 kg
ENGINE				
Engine type	Kohler Diesel	Deutz Diesel	Ford Benzin	CAT Diesel
Engine power	55 kW	55 kW	63 kW	50 kW
Torque	330 Nm (1500 RPM)	260 Nm	185 Nm	207 Nm ½
DRIVE				
Chassis	4WD	Tracks	4WD	Tracks
Maximum travel speed	3,5 km/h	4,4 km/h	4,8 km/h	N/A
Ground clearance	175 mm	N/A	230 mm	N/A
CUTTERWHEEL SYSTEM- AND DRIVE				
Cutterwheel (Diameter and width)	720 x 15 mm	550 x 24 mm	584 x 38 mm	584 x 28 mm
Teeth quantity	28	32	24	30
Tooth type	Triplex, can be roted 3 times	Herder-Fermex teeth, can be rotated 3 times	Rayco Super teeth, can be resharpened	Vermeer YellowJacket, can be rotated once
Cutterwheel drive	Double-sided V-belt drive	Hydraulic	Toothed belt 37 mm via hydromoter	Cardan shaft
Speed m/s of cutter-wheel	47 m/s	36,3 m/s	34 m/s	N/A
Maximum grinding depth/ hight	600 mm / 960 mm	660 mm / 630 mm	533 mm / 508 mm	410 mm / 690 mm
Sweep width	2300 mm	1800 mm	1651 mm	1650 mm
Pivot point for sweep	Ball-bearing turn-table under engine (Ø 500 mm)	Pivot point at the front	Pivot point at the front	Pivot point at the front
Chip guard	Chains and rubber guard around the cutter wheel	Protective flap over the cutter wheel	Rubber guard around chip bunker	Rubber guard on the cutting wheel and chip container
OPERATION, SPECIAL FEATURES AND PRICE				
Remote control type	Scanreco	Autec	Magnetek	Vermeer
Price teeth	19,54 €	24 €	18,50 €	14 €
Special features	Twin wheels as stand-ard; also available on tracks; Lifting eye for transport; Rear dozer blade; FSI Powersweep automatic sweep control; Chip Baffle	Also available with wheel drive; Autopilot for sweep; Teeth and holders can be changed individually; front dozer blade available	Twin wheels as stand-ard; Hydraulic dozer blade; Automatic swep - Command cut; Addition-al slow speed (Creep mode)	Fold-out control station with armoured glass plane and protection guard; Automatic sweep Smart Sweep
List price NET	87.900 €	90.275 €	90.000 €	90.950 €